Drive system operating manual

M1 mid-drive bikes with TQ motor

Powered by Fritzmeier.
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Dear Client,

Congratulations on purchasing a high quality electro bike from M1-Sporttechnik. You have chosen the perfect combination of a reliable frame, high quality components and high performance drive technology.

To ensure the electronic drive components always stay operational, it is essential to perform regular care and maintenance.

For this reason, we ask you to please read through these operating instructions very carefully, and to follow the instructions which explain how to use the electric drive functions, how to take care of the battery and use the charger.

If even after you finish reading the operating manual, you still have some questions that remain open, your M1-Sport-Technik team is naturally available to you at all times. Thank you having shown confidence in us and we wish you lots of fun and always a safe journey with your Pedelec, S-Pedelec or R-Pedelec of M1.

Your M1-Sporttechnik team

It is mandatory to watch out for all hints and notes which are marked by this two icons on the left. You have to follow all safety indications and security advices while using your M1 product. With these icons all possible hazards, risks and special characteristics will be explained inside the manual.
E-BIKE CLASSIFICATIONS

Because in some countries the type of drive assistance is important for driving licenses, distinctions are made between the following classes:

**Pedelec - 25 km/h**
Electro bikes with pedal assist up to 25 km/h

**S-Pedelec (Speed Pedelec) - 45 km/h**
Electro bikes with pedal assist up to 45 km/h

**R-Pedelec (Race-Pedelec)**
Electro bikes with pedal assist, which does not switch off at a defined speed limit.

The key difference between M1-Pedelecs, M1-S-Pedelecs and M1-R-Pedelecs is basically only the legal framework, as there practically is no difference between the bike models, other than the speed.

**THE PEDELEC**

An electro bike with limited pedal assist up to 25 km/h.

In an electro bike with limited pedal assist, the motor only has an effect when you apply a certain force on the crank lever. The motor only assists you when you pedal. Pedelecs are exempt from the EU motor vehicles directive if they are limited to an average engine power of 250 W and the power assist is limited to 25 km/h. As a result, Pedelecs do not require an operating permit, and in Germany users are freed of the obligation to wear a helmet, to have insurance or a driver's license. That being said, the M1-Team recommends wearing a helmet as a general rule! Under the terms of the German Highway Code, these “normal” Pedelecs are considered as bicycles.

Please follow the regulations that apply in each individual country for using a Pedelec.
THE S-PEDELEC

An electro bike with limited pedal assist up to 45 km/h.

In the S-Pedelec also, the motor only has an effect when you apply a certain force on the crank lever. So in S-Pedelec too, the motor only assists you when you pedal. In Germany a bike helmet must be worn on electro bikes with pedal assist up to 45 k/h, and a moped driver’s license (at least) is required. S-Pedelecs also have to be insured and they can only be used on bicycle paths if these are permitted for mopeds, for example with the added “Mofa frei” sign and always only outside the town limits. In precise legal terms, S-Pedelecs are small, low power motorbikes” in vehicle class L1e-B in European Union.

When using an S-Pedelec, please follow the regulations that are applicable in each individual country.

THE R-PEDELEC

Electro bike with pedal assist that has no limit on its maximum speed.

In R-Pedelecs also, the motor only has an effect when you apply a certain force on the crank lever. So in S-Pedelecs too, the drive only assists you when you pedal. R-Pedelecs are not authorized for use on public roads, and are not in conformance with Highway Traffic Act! You can only use them on private land or racetracks that are available for this purpose. If you ride an R-Pedelec on the public road you can be charged with driving without insurance, driving without a license or other offenses. The vehicle class of an R-Pedelec is L3e in European Union.

When using an R-Pedelec vehicle class L3e, please follow the regulations that are applicable in each individual EU country and also outside of the EU.
SAFETY NOTICES

Highway Traffic Act

The general terms of the Highway Traffic Act apply to the use of electro bikes on the public roads. The following regulations also apply to the use of your M1-Pedelec or S-Pedelec.

Please respect the current restrictions in individual townships and states relating to the use of forest paths or trails, as many regions have specific rules.

GENERAL SAFETY NOTICES

Respect the rules for cycling safely, just like with other sports, the danger of injury is always present. Even if you feel fully confident, you should still ride with caution, and avoid taking risks. And for your own safety, don’t overestimate yourself. Always wear sufficiently protective clothing and a helmet, as this is the best way to protect your head from injury. Please keep this in mind even on trips that may not see dangerous. The M1-Team recommends always wearing a helmet!

TECHNICAL SAFETY NOTICE

This original operating manual contains useful information for correctly using and regularly maintaining the drive components.

We recommend you to have proper servicing or repair done only by your authorized M1 dealer. Installation or repair that is improperly carried out can lead to malfunctions and accidents.

Neglecting the instructions and safety notice could damage the product and cause an electric shock, fire and/or serious injuries.

Damage caused by non-respect of the instructions in this manual, as well as improperly executed installation or repairs invalidates the warranty and guarantee.

For transport-related technical reasons the battery is not fully charged when it is delivered. As the battery in any case discharges by itself due to technical and physical causes, you must charge the battery once fully before you use it for the first time. After this it should be totally discharged by riding at least one time. Just then the system learns the capacity of the whole system.
BIKE FUNCTIONS

PUSH-BUTTON FUNCTIONS

**Switching-on:** To activate the system, press 1x briefly on the button to the left side of the battery housing or press the power button on the display.

2 small green LEDs now light up next to the button (see figure). If only one LED lights up, check that the battery is correctly inserted into the frame and retry to inset it to make sure it's done well. The connector must create contact between the battery and the cable harness. The left LED (12V) indicates that the 12V supply for the lights and the internal system power is available. The right LED (HV) indicates that the 48V supply for the drive has been released and the battery is correctly installed in the bike.

**Battery capacity:** A short press on the push-button on the battery enclosure briefly displays the state of charge of the battery on the LEDs next to the push-button. These 5 LEDs corresponds to the SOC indicator at the display. The state of charge also could be checked by disassembled battery. The LEDs indicate as follows:

- 5 LEDs on: 81% - 100%
- 4 LEDs on: 61% - 80%
- 3 LEDs on: 41% - 60%
- 2 LEDs on: 21% - 40%
- 1 LED on: 6% - 20%
- 0 LED on: less than 5%

**Switching off:** Press the push-button for at least one second, this causes the whole system to switch itself off. A moving LED appears briefly on the display panel indicating that you can release the button. When the system has been unused for 15 minutes, it switches itself off automatically. With the power button of the display the system could be switched off as well in the same way.
DISPLAY

Here you can see the information that can be shown on the display. The display is fixed in pace and is not removable.

Starting Screen

Index 1: Assist Mode
Index 2: Velocity
Index 3: State Of Charge

YOUR M1 BIKE’S SENSORS

Your M1-product is equipped with high-quality sensors.

The switch sensor monitors the action of the switch and ensures the motor is cut off immediately during the switching process in order to minimize wear on the shifting components. Additionally both brake levers are equipped with sensors which ensure that the motor is cut off immediately during the braking process. A torque sensor in the motor enclosure measures the force you apply on the pedals and automatically computes the amount of motor power to be injected for the selected drive level (see drive level table). A speed sensor measures the actual speed and shows this on the display.

CONTROLS

Display buttons T1 – T5 are necessary to switch between several functions. Configuration of buttons:

T1: Increase assist level
T2: Decrease assist level
T3: Joystick for menu navigation
   (4 directions and push button function)
T4: Power switch On / Off
T5: High beam On / Off (if existing)
By pressing briefly on **button T1**, you activate assist level 1. Each additional key-press switches to level 2, level 3, level 4 and level 5. By pressing **button T2** you switch in the opposite direction.

The 6 drive levels and 5 assist modes:

<table>
<thead>
<tr>
<th>Drive level</th>
<th>Name</th>
<th>Drive assist (percentage of your pedal force)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No assist</td>
<td>-</td>
</tr>
<tr>
<td>1</td>
<td>Range-Extender</td>
<td>45 %</td>
</tr>
<tr>
<td>2</td>
<td>Eco</td>
<td>45 %</td>
</tr>
<tr>
<td>3</td>
<td>Tour</td>
<td>110 %</td>
</tr>
<tr>
<td>4</td>
<td>Sport</td>
<td>195 %</td>
</tr>
<tr>
<td>5</td>
<td>Power</td>
<td>550 % (400% at S-Pedelec)</td>
</tr>
</tbody>
</table>

In Level 1 (**Range Extender**) the speed is limited to 20 km/h in the Pedelec, and 30 km/h in the S-Pedelec and R-Pedelec.

If you intend to ride on assist level 0 for a longer time the system will switch off automatically after 15 minutes. The 48V system is inactive in this riding situation. To avoid the automatically switch off during your ride, please switch to assist level 1 at least one time during 15 minutes to reactivate the 48V system and restart the time window.
With button T3 (Cursor) you switch through the speedometer functions. Following main screens are available. Sub categories like shown at figure 4 and 5 are getting visible by using the button T3 (joystick). Just move the joystick downwards.

By moving down the button T3 (joystick) you can reset the current “Maximum Speed” of the trip, the “Trip Distance” and “Average Speed” of the trip back to Zero. The “Overall Distance” is not settable to avoid a manipulation of the S-Pedelec mileage. How to reset the mentioned values as described by point 4 will be explained on the next page.

The “Distance To Go” value will be steadily updated during the ride, depending by the chosen assist level. If you switch on the system the distance to go value is just an indicator for the correct distance. After starting your ride the value will be updated continuously, depending on the basic condition of your chosen assist level and own pedaling power. When your bike is brand new the index will learn step by step. That means the correctly shown value could possibly only be shown on the display after the new battery has been ridden to totally discharge one time.

**Advice:**
*Always start cycling in a low/easy gear even when you are using pedal assist;* just as you would if you were cycling without pedal assist. This reduces wear on the chain, the sprockets and the freewheel body. You could buy the smaller sprockets separately (11t, 13t, 15t, 17t) so that you don’t have to buy the complete cassette if the gears are creaking by worn sprockets.
RESET OF SPEEDOMETER VALUES

Trip Distance, Average Speed and Maximum Speed of your trip could be reseted. Push on the starting screen (figure #4, previous page) the button 3 (joystick) one more time to the bottom direction. The left picture with inscription “RESET” shows up. Push one more time into the same direction and you can see the frame will be highlighted. Now just push the joystick like an ordinary button and all three values will be reset to zero.

BLUETOOTH

Screen 6 (figure #6, previous page) shows the Bluetooth mode. By moving the joystick downwards you could switch to „Smartphone“. The row is highlighted now. By pressing the joystick (button T3) now like a push button the smartphone will be chosen and the display right now is in pairing mode. Now each smartphone could be paired in the bluetooth settings of the smartphone itself.

PUSH/START ASSIST

The system has a push/start assist that accelerates the bike up to 6 km/h without pedaling. The push/start assist is activated by holding down Key 3 (arrow down key) and at least drive level 1 is selected (Figure shows drive level 2). In drive level 0 the push/start assist cannot be activated. Push/start assist stops only when you release key 3 again. The push/start assist also stops immediately if you put on the brake.

Do not press the push/start assist inadvertently but only if you actively want to start. If you inadvertently activate the push/start assist, this can lead to a fall.
CYCLING WITHOUT BATTERY

Riding the bike is also possible without the battery. In this case you will not have the speedometer display. Also if you have completely discharged the battery during a trip the display will not show anything.

REMOVING THE SEAT SUPPORT FROM THE S-PEDELEC

To remove the seat post of your S-Pedelec you have to disconnect the connector of the cable to the rear light. You will find it below the seat post. To do this, gently press the connector with your fingernail at the spot marked with the arrow, and pull it out.

To reassemble it, take care to insert the connector and cable through the seat post. The connector locks into place when plugged in and the rear light, brake lights and license plate light are activated again when the system is switched on. To reassemble it, take care to thread the connector and cable through the seat pillar. The connector locks into place when plugged in and the rear light, brake lights and license plate light are active again when the system is switched on.

THE KICKSTAND AT YOUR M1-BIKE

Since 2018 kickstands which do not snap in automatically when you start riding the bike are allowed at bikes below 34kg now. Both kick stand versions are still available at the M1-bikes.

Watch out while starting your ride that your kickstand has been retracted by using your foot. A not retracted kickstand could cause an accident during cornering while touching the ground with the kickstand itself. This could cause you are losing your balance and the result could be heavy crash on the road with heavy injuries.
LOADING THE BATTERY

A charger is supplied with the M1-Bike. Above the power cable connector in the charger you will find a switch which you can use to switch the charger on and off.

During charging process with assembled battery the display lights up and is frozen. This is a blocker to avoid a systems run during charging. After Cut-off of the charger the battery needs to get switched off and on one times.

**Only the original charger delivered with the electric bike should be used to charge the battery!** Otherwise damage can occur to the system and worst case, cause a fire in the battery.

On the left side of the battery you will find a magnetic protective cap that covers the charger socket. Pull this off before you plug in the charger connector.

Also take away this cap if you want to take out the battery out of the frame. **Otherwise the battery will cant into the frame** while trying to take it out of the frame!!!

Simply insert the plug into the battery. The plug and the socket stay together, held automatically by a magnet. Slots in the connector prevent you connecting it with the wrong polarity (see figure).

Take care that the plug and the socket contacts are both dry and clean. Please also make sure that there are no metal shavings on the contacts. Remove them if needed.

Now you can charge the battery with power from a regular domestic power plug (110V AC – 240V AC). To do this, turn on the switch on the charger.

**The battery also can be charged when disassembled. To avoid a drop down of the battery is mandatory!** A battery is a high capacity power source. When handled wrong or ungentle it could cause a deathtrap like fire or explosion of the battery!!!
The system can be charged either when it is switched on when it is off, and while the battery is either installed or uninstalled. The charger has a status LED which blinks orange while charging is in progress and displays green when charging has finished. The charger can then be removed. Charging lasts about 3.5 hours if the battery has been completely discharged beforehand. After about 1 hour of charging, the battery already reaches about 80% of capacity. If charging does not start after connecting the charger to the electric supply, switch off the charger switch, wait for the chargers LED to go off, and switch on again.

During charging you will hear a fan humming in the charger. Never let your Li-Ion battery charge without supervision. After charging is complete, switch off the charger using the On7Off switch, pull the plug out of the charger socket and the power plug out of the domestic power socket.

To uninstall the battery, open the M1 knee lever on the down tube, turn the key inside the lock half and release the lock.

**Take care that the battery does not fall out of your hands at this point!**

If the battery will not be loose now, press the peg which is free now by the opened knee lever. Grab the battery carefully below the down tube to avoid a battery damage by falling out of the frame. The battery turns on an axle in front of the motor and you could pull it out now in front wheel direction. To insert the battery now, proceed in the opposite order. You have to watch out that the rip shape of the battery housing fits exactly to the axle in front of the motor. Otherwise the battery can fall out during riding. Turn the key inside the lock back before. When you can hear the clicking noise of the lock you can take away your hand. The battery is engaged now in fixed position. Make sure you hear the click. Otherwise the battery can fall out while riding and this could cause damage of the battery as well as an accident while riding, because the battery will fall in front of your rear wheel. Now close the knee lever and the battery is engaged completely. If the knee lever is not on tension, please loosen the two screws and adjust the position of the knee lever to get enough tension while closing. Please tighten both screws with a torque of 5-6Nm an.

**Check before each ride that the battery is in correct and engaged position without any sideplay!** The knee lever must be tensioned completely and is not allowed to spend any side play! A falling out battery during the ride could cause a heavy accident, because it would drop directly in front of the rear wheel. Besides a falling down battery could generate a later risk of fire. The knee lever could be adjusted by its two screws by each authorized M1 dealer.
The memory effect does not exist in Li-lon batteries. Consequently you can charge the battery anytime without impairing the charging capacity. The charger can stay connected to the battery for an unlimited time, without problems occurring. However we ask you to please disconnect the battery from the power supply after it is charged in order to conserve precious resources. Charging can also be interrupted at any time.

The battery reaches its maximum capacity after about 5 charge and discharge cycles, and overall battery life will be maximized if you charge it in an ambient temperature of +10°C and +30°C.

On cold days especially, do not charge your battery in the open air. When you take the battery out of its holder and leave your M1-bike outside, you should protect the connectors from rain, moisture, humidity and dirt, with a plastic bag for example.

BATTERY STORAGE:

- Store the battery in a dry place with an ambient temperature of approx. 20°C.
- Avoid very low and very high temperatures. Otherwise you will shorten the life of the battery.
- Store the battery for long periods with a charge level of 50-60%.

It is mandatory to ensure that if the bike is not used for long periods that the battery is connected to the charger for 1 hour from time to time. During a three months period the battery must be charged for 1 hour to avoid a deep discharge! Also never put an empty battery into storage without first recharging it for 1 hour. If the empty battery is not recharged, a deep discharge can occur even quicker in this case. A deep discharged battery can only rarely be recharged, and no warranty claim is possible. The battery electronic shows in the system readout, among other things, if the battery has been deep discharged during its operating life.

BATTERY SAFETY NOTICES

Never open the drive unit components and above all not the battery!
Improper opening of the battery or intentional damage to it carries the risk of serious injury. Opening or manipulating the electrical and mechanical components of the drive, the battery to the charger and manipulating the software invalidates any guarantee and warranty claims.

Do not on any account use a defective battery or a defective charger. Defective electrical components and cables can lead to short circuits and must be immediately replaced by an appropriate dealer. If you are not absolutely sure or if you have questions, contact your authorized M1 dealer.
Charge your battery exclusively with the charge supplied with it. Do not use another charger from another manufacturer, even if the connector fits in your battery. The battery can heat up, catch fire or even explode!

Do not charge any other device with the charger supplied with the battery, only charge the M1 product that you received with this charger. Use the battery you purchased only with the M1 product you purchased with it.

Never charge your battery without supervision and never at night. It is best to charge your battery during the day and only in a dry, non flammable room. Preferably in rooms that are equipped with a smoke or fire alarm, but not in your bedroom.

Place your battery on a large non flammable support, for example made of ceramic or glass while it is charging and do not place the battery or the charger in strong sunlight. Risk of explosion!

Take care that the battery and charger to not get into the hands of children!

The battery and the charger must not get wet and above all, never get dipped in water! Risk of explosion! Never clean the battery with a steam cleaner or garden hose.

The motor must not be washed with a steam cleaner or garden hose, to avoid any water penetrating inside.

If you transport your bike on a car bike rack, avoid driving in the rain, because the rainwater on the journey has the same effect as a steam cleaner.

In the case of fast changing temperatures from cold to warm, there is a danger of condensation forming on the charger. It is recommended to connect the charger to the power source only when it has reached the temperature of the warm room.

The charger must only be connected to a 100-240 Volt socket. You must please check imperatively if the available supply voltage is identical to the voltage input of the charger before you connect the charger to the electrical supply. You can also find the input voltage of the charger on the serial number plate on the rear side of the device.

Never place the battery near a fire or very hot object such a radiator for example, because enormous heat can lead to explosion of the battery. Furthermore high temperature reduces the useful life of the battery. For this reason you should ensure there is sufficient air circulation while it is charging.

If you detect smoke or an unusual smell, please pull the power plug of the charger out of the socket and move the battery away from the charger. Then contact your authorized M1 dealer immediately.

If the battery or charger needs to be replaced, please only use original replacement parts. Do not use other spare parts or accessories, as this increases the risk of damage or malfunction and invalidates any claims under the warranty or guarantee.

Disposing the battery in the household refuse container is forbidden! The battery must be disposed of in conformance with the battery disposal regulations. For this reason the seller of a new battery must take back your old battery and dispose of it properly.
CHASSIS

For air pressures, please refer to the manufacturer’s descriptions provided with the suspension fork and rear damper. You will find the valve to attach a high pressure shock pump at the position marked in the photo.

**ATTENTION: Never use a compressor to fill up the air.** As a rule of thumb for the right pressure value, set it so that you need about 18mm travel for the rear shock if you sit on the bike while it is standing still (negative spring path/sag). For the fork, you can assume 1.5 to 30mm travel when sitting on the bike while it is standing still.

Always pay attention to enough pressure in the rear shock and suspension fork. If you step with too little pressure (too much negative spring path/sag) in a slanting position the pedal may hit the ground and you could fall.

If your components will have a lock out lever, never start descends with locked lever of fork or damper to avoid damages at damper and/or frame.

MAINTENANCE OF THE DRIVE COMPONENTS

Maintenance work should always only be done by an authorized M1 dealer. If used carefully and properly the electric drive does not require any maintenance. However, every 1000 km or at least once a year you should have a safety inspection carried out by an authorized M1 dealer. He will check the attachments of cables and parts as well as the electrical system functions and the operational safety of the battery.

M1 - VerifiR® - LABEL

On the top or down tube of your M1 bike you can find the laminated VerifiR®-Label. With the corresponding VerifiR®-App (in App-Store: „VerifiR NFC“ or in Playstore: „VerifiR OEM“) you could get several information of your bike like films and manuals by scanning it with your cell phone NFC-reader. These content is variable and it is worth to check time by time about any available news here.
WARRANTY / GUARANTEE STATEMENT

M1-SPORTTECHNIK GMBH & CO. KG manufacturer’s guarantee

a) Five -years M1-Sporttechnik guarantee for the frame

M1-Sporttechnik guarantees frames labeled with the M1 logo for a total of 5 years against defects in materials and workmanship.

This guarantee only applies to privately-owned M1 products.

A prerequisite of this guarantee is registration of the product, immediately after purchase, in the „Service“ area of the M1 website www.M1-Sporttechnik.de and yearly service by a specialist dealer which must be recorded in the service log on the back page of the cycle handbook delivered with the product. As its own discretion, M1-Sporttechnik will repair the defective component or replace it with the same or at least equivalent products or more recent products; reworks are also permitted. The warranty does not include attached parts such as mudguards, kickstands, etc., and extra costs such as alterations or freight costs. For wear parts and safety related components like handlebars and those listed in the cycle handbook supplied with the product, the legal warranty applies.

From the 3rd up to the 5th year after the product registration date, we charge 50% share of the current sales price for the replacement part or rework cost; in exchange the customer receives the latest technology.

b) No M1-Sporttechnik guarantee for other manufacturer’s components

The legal guarantee applies to components from other manufacturers such as Shimano, Sram, Magura, DT-Swiss etc. Some manufacturers also offer an extended manufacturer’s guarantee. If the bike is not purchased directly from M1-Sporttechnik then the guarantee is handled exclusively through the seller.

c) The M1-Sporttechnik guarantee is invalidated if:

- Proof of regular service by a specialist dealer is lacking.
- There is improper use and or non-respect of the original operating manual and cycle handbook, including all care and maintenance instructions.
- There is (prior) damage due to fall, accident or transport damage.
- Defects are present that result from the fact that the original defect was not immediately examined by M1-Sporttechnik or a specialist firm. The specialist firm has to use its expertise to decide how to proceed and if needed forbid further use of the bike for safety reasons.
- Defects are due to force majeure such as events beyond the control of M1-Sporttechnik.
- Defects are caused by modifications to the bike’s specifications, not in the parts list supplied with the product (or your configurator order) for example by subsequent installation of components not expressly released by M1-Sporttechnik.
• The defect is in wear parts like chains, cassettes, brake linings disc brakes, tires, tubes, brake and shifter cables including sleeves, bulbs, batteries etc.

• There is a change of ownership; Defect caused during participation in competitions.

All moveable parts of your bike must be frequently maintained, checked and in case of damage they have to be replaced. It’s especially important for wheel sets tires, tubes, sprockets, derailleurs, dampers and forks, bearings and other parts which are under mechanical loads during riding. In normal case this check should be done all 500 km or latest time after 6 month at M1-Sporttechnik or in an authorized bicycle workshop.

CRASH REPLACEMENT

M1-Sporttechnik accompanies its products even in cases of damage that are not within the terms of the M1-Sporttechnik guarantee, for example due to accident or misuse. We offer an attractive exchange price for all M1 products.

In such cases M1-Sporttechnik guarantees a crash replacement discount of 50% to each registered customer for a period of 5 years. The discount of 50% is given on the current sales price of the frame. In exchange the customer must send in the defective frame and describe the circumstances of the damage.

DECLARATION OF CE CONFORMITY

The products described below

Product name: M1-Spitzing & Sterzing Pedelec, M1-Spitzing & Sterzing S-Pedelec, M1-Spitzing & Sterzing R-Pedelec

Of the manufacturer:

M1-Sporttechnik GmbH & Co. KG
Forststraße 2
85653 Großhelfendorf

Conforms to the regulations and norms of the CE conformity declaration.

ENVIRONMENTALLY-FRIENDLY DISPOSAL

The components of the M1-Spitzing models and the battery must not be disposed of in household refuse bins.
• Motor, display, battery, speed sensor, spare parts and all packagings must be given back to environmentally-friendly disposal in your area. Do not dispose this kind of materials in your household waste!

• No more useable electric devices must be disposed corresponding to European Directive 2012/19/EU. Defective or no more useable batteries must be disposed corresponding to European Directive 2006/66/EG and must be given to a certified disposal collection station.

• No more serviceable batteries or displays has to be disposed at your authorized dealer or at a certified disposal collection station.

• Regarding your local disposal instructions, please watch out also for your country-specific laws and regulations.

DESIGNATED USE OF THE BIKE
The bike is made for concrete roads and well prepared country roads with fine and coarse-grained surfaces. Also for off road tracks with sloping surface. Sporadic jumps with up to 1m drops are also possible (only for well-trained riders) with the M1-SPITZING EVOLUTION. For the M1-STERZING EVOLUTION the height is limited to only 0,5m (also only for well-trained riders).

STRUCTURAL AND GROSS VEHICLE WEIGHT
The gross vehicle weight is limited to 130kg, including riders weight, bike itself and possible luggage or carried items. The structural weight is between 26.2 and 27.8kg, depending on the version.

USE WITH TRAILERS OR USE WITH CHILD’S SEATS
Pulling a trailer is forbidden, because of the different clutch systems of the several trailer manufacturers and because of the carbon material of the frame. Same issue for child’s seats, it is not allowed to use any child’s seat at our carbon frames.

CARRIER MOUNTING
The Sterzing frame is prepared to add a carrier. The “Racktime” model „STAND IT“ with unit number 01210 and 400 mm carrier stays is suitable for these bike model and both frame sizes. The maximum load for this carrier is 25kg. A carrier mount at the Spitzing model is not intended. During compression of the rear shock the carrier could collide with the rear wheel or with the seat post (depends on the carrier model) and could cause a heavy crash while riding with bad injuries to the rider.

EMISSION SOUND PRESSURE LEVEL
The maximum A-weighted emission sound pressure level at position of the riders ear is lower than 70 db(A).
**TORQUE OVERVIEW:**

<table>
<thead>
<tr>
<th>Component</th>
<th>Torque (Nm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stem: Handlebar and fork clamping area</td>
<td>5</td>
</tr>
<tr>
<td>Topcap</td>
<td>2</td>
</tr>
<tr>
<td>Bottle Cage Screws</td>
<td>4</td>
</tr>
<tr>
<td>Rear Derailleur at Hanger</td>
<td>9</td>
</tr>
<tr>
<td>Rear Derailleur, Wire Clamping Screw</td>
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</tr>
<tr>
<td>Crank Clamping Screws</td>
<td>40</td>
</tr>
<tr>
<td>Lock Ring Cassette</td>
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<tr>
<td>Shifting Lever</td>
<td>6-8</td>
</tr>
<tr>
<td>Brake Lever At Handlebar</td>
<td>3</td>
</tr>
<tr>
<td>Brake Caliper On Frame</td>
<td>6</td>
</tr>
<tr>
<td>Brake Disc On Hub</td>
<td>6</td>
</tr>
<tr>
<td>Postmount Adaptor At Fork And Frame</td>
<td>6</td>
</tr>
<tr>
<td>Motor Cover</td>
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<tr>
<td>Venting Screws At Brake Lever</td>
<td>0.5</td>
</tr>
<tr>
<td>Chain Ring Screws Steel</td>
<td>13</td>
</tr>
<tr>
<td>Chain Ring Screws Aluminum</td>
<td>10</td>
</tr>
<tr>
<td>Pedal Axle At Crank</td>
<td>34</td>
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<tr>
<td>Seat Clamping Screw</td>
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<tr>
<td>Brake Fluid Reservoir</td>
<td>0.5</td>
</tr>
<tr>
<td>Kickstand Screws At Frame</td>
<td>10</td>
</tr>
<tr>
<td>Carrier Screws At Frame</td>
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</tr>
<tr>
<td>Underride Guard</td>
<td>8</td>
</tr>
<tr>
<td>Knee Lever Of Battery Mount</td>
<td>5-6</td>
</tr>
<tr>
<td>Motor Screws At Frame</td>
<td>20</td>
</tr>
<tr>
<td>Damper Eye Front And Rear</td>
<td>6/8</td>
</tr>
</tbody>
</table>

*Important Notes:*
- It is only allowed to use M5x10 screws to avoid an insertion of the screws into the battery housing which would destroy the battery!!!
- It is only allowed to use M4x4 screws to avoid an insertion of the screws into the battery housing which would destroy the battery!!!
TECHNICAL DATA

TEST STANDARD: EN15194:2017, VO (EU) 168/2013

DISPLAY:
LCD Display

DRIVE:
Drive type: Mid Drive by TQ-Systems Germany
Drive performance: 48V
250 W nominal (Pedelec) 500 W nominal (S-Pedelec) 800 W nominal (R-Pedelec)
Velocity: max. 25 km/h (Pedelec), max. 45 km/h (S-Pedelec),
no limitation (R-Pedelec)
Torque: max. 120 Nm Guarantee: 2 years

BATTERY:
Type: Lithium-Ionen
Capacity: 18,27 Ah, 877 Wh or 20,8 Ah, 1.048 Wh
Nominal Voltage: 48 V
Operating temperature range: - 15° bis + 60°
Guarantee: 2 years or 500 complete charging cycles within 2 years

CHARGER:
Charge duration: approx. 3,5 h for 100 %
Charger: 110 / 240 Volt AC, 5A, built-in fan